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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 09/905,274
Inventor(s) : Clifford Theodore Popsdorf, et al.
Filed : July 13, 2001
Art Unit : 3721
Examiner : Sameh Tawfik
Docket No. : 8690
Confirmation No. : 2737
Customer No. : 27752
Title : A Continuous In-Line Pleating Apparatus and Process

REPLY BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

This Reply Brief is filed in response to the Examiner's answer filed March 15, 2007.

A timely Notice of Appeal was filed on October 10, 2006.

REAL PARTY IN INTEREST

The real party in interest is The Procter & Gamble Company of Cincinnati, Ohio.

RELATED APPEALS AND INTERFERENCES

There are no known related appeals, interferences, or judicial proceedings.

STATUS OF CLAIMS

Claims 1-19 and 21-27 are rejected. Claim 20 is withdrawn from consideration.

Claims 1-19 and 21-27 appealed

A complete copy of the appealed claims is set forth in the Claims Appendix attached herein.

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STATUS OF AMENDMENTS

No amendment was filed.

SUMMARY OF CLAIMED SUBJECT MATTER

Claim 1 relates a web pleating apparatus having a mutually orthogonal machine direction, a cross machine direction and a Z-direction. The apparatus comprises a first series of elongate spaced protuberances converging in the cross-machine direction; a second series of elongate spaced protuberances converging in the cross-machine direction; and a drive element disposed to form a friction nip with the first series of elongate spaced protuberances. The first series of protuberances and the second series of protuberances interleave in the Z-direction. The first series and second series of interleaved protuberances are capable of folding a pleatable web into a generally pleated pattern of machine direction pleats upon contact of the web relative to the first and second series of protuberances. See Specification, page 7, line 12 to page 9, line 22; and figures 1-2 and 4-5, reference items 20, 28-31.

Claim 14 relates a method for forming a pleatable web. The method includes steps of providing a pleatable web; scoring the pleatable web in the machine direction; and transporting the scored web relative to a first series and second series of cross-machine direction converging elongate spaced protuberances interleaved in the Z-direction. The scored web is transported by contact with a drive element. The drive element forms a friction nip with the first series of converging elongate spaced protuberances. The scored web passes through the friction nip. The scored web is folded by the interleaved first series and second series of converging protuberances. The interleaved converging protuberances pleat the pleatable web in the machine direction. See Specification, page 7, line 12 to page 9, line 22; and figures 1-2 and 4-5, reference items 20, 28-31.

Claim 21 relates a web pleating apparatus having a mutually orthogonal machine direction, a cross-machine direction, and a Z-direction. The apparatus comprises: a first series of non-collinear elongate spaced protuberances converging in the cross-machine direction; a second series of non-collinear elongate spaced protuberances converging in the cross-machine direction; and a drive element disposed to form a friction nip with the

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first series of elongate spaced protuberances. The first series of protuberances and the second series of protuberances interleave in the Z-direction. The first series and the second series of interleaved protuberances are capable of folding a pleatable web into a generally pleated pattern of machine direction pleats upon contact of the web with the first and second series of protuberances. See Specification, page 7, line 12 to page 9, line 22; and figures 1-2 and 4-5, reference items 20, 28-31.

Claim 25 relates a web pleating apparatus having a mutually orthogonal machine direction, a cross-machine direction, and a Z-direction. The apparatus comprises: a first series of collectively elongate spaced protuberances converging in the cross-machine direction; a second series of collectively elongate spaced protuberances converging in the cross-machine direction; and a drive element disposed to form a friction nip with the first series of elongate spaced protuberances. The first series of protuberances and the second series of protuberances interleave in the Z-direction. The first series and the second series of interleaved protuberances are capable of folding a pleatable web into a generally pleated pattern of machine direction pleats upon contact of the web within the first and second series of protuberances. See Specification, page 7, line 12 to page 9, line 22; and figures 1-2 and 4-5, reference items 20, 28-31.

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 1, 2-6, 13-18, 21-23, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tipper (U.S. Patent No. 3,348,458) in view of McConnell (U.S. Patent No. 775.495).

2. Claims 7-9, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tipper (U.S. Patent No. 3,348,458) in view of McConnell (U.S. Patent No. 775.495)

3. Claims 10-12, and 24 are rejected under 35 U 103(a) as being unpatentable over Tipper (U.S. Patent No. 3,348,458) in view of in view of McConnell (U.S. Patent No. 775.495) and further in view of Benedict (2,314,757).

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RESPONSE TO THE EXAMINER'S ANSWER

In support of finding claims 1, 2-6, 13-18, 21-23, and 25-27 under 35 U.S.C. 103(a) unpatentable over Tipper (U.S. Patent No. 3,348,458) in view of McConnell (U.S. Patent No. 775,495), the Examiner combines a portion of the McConnell reference with a portion of the Tipper reference.

The drive element (intermeshed rollers 8) of McConnell serves to engage the entirety of the upper and lower surfaces of the corrugated sheet so as to finish the corrugating and to draw the sheet through the device (Col. 2, lines 19-27). The drive element is used after the initial corrugation of the web material by intermeshed rollers (item 5). Items 8 and 5 do not form a nip of any sort.

The Examiner provides that the drive element of McConnell would be disposed in a similar manner downstream of the protuberances of the Tipper reference and that so disposed would constitute a nip between a drive element and a set of elongate protuberances.

This configuration offers no hope of success in that the web of Tipper at this location is pleated and compressed offering only the crests of the pleats for upper and lower engagement. A pair of intermeshed rollers adapted to engage the entirety of both surfaces of a web would be unusable in this location, a pair of rollers contacting the crests of the pleats and seeking to drive the web in such a manner relies upon the ability of the pleated web to withstand the compressive forces necessary to shift the web and pull it through the pleating apparatus. Neither of the aforementioned drive schemes satisfies the requirement of the claims that the drive element forms a friction nip with the elongate protuberances converging in the cross-machine direction. Nothing about the rollers 8 of McConnell converges in the cross-machine direction or is elongate.

Despite the similarity of the problems of Tipper and McConnell, the drive mechanism of McConnell does not lend itself to driving the web as configured in Tipper. There is no motivation to combine drive element of McConnell with the pleating arrangement of Tipper. Due to the details of operation of the McConnell drive there is no reason to expect it to successfully pull the pleated web of Tipper through the apparatus.

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Even in the event that the drive element of McConnell could be satisfactorily modified such that it would pull the pleated and compressed web of Tipper through the pleating apparatus without crushing the pleated web, the nature of the drive does not satisfy the requirements of the claimed invention. The claims provide that the drive element forms a friction nip with a first set of elongate protuberances which converge in the cross machine direction and which are interleaved with a second set of elongate protuberances in the z direction. Nothing the Examiner has described as the combination of McConnell and Tipper satisfies this limitation of the claims.

To establish a *prima facie* case of obviousness under 35 U.S.C. §103(a), three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Third, there must be a reasonable expectation of success of obtaining the claimed invention based upon the references relied upon by the Examiner. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). The combination set forth as the basis for the current rejection fails to satisfy each of these criteria.

SUMMARY

In view of all of the above, it is respectfully submitted that each of the rejection depends upon the combination of Tipper and McConnell. This combination fails each of the three criteria necessary to establish a *prima facie* case of obviousness under 35 §103(a). As a *prima facie* case of obviousness has not been properly established, the rejections under 35 §103(a) should be overturned.

Respectfully submitted,

THE PROCTER & GAMBLE COMPANY



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CLAIMS APPENDIX

1. (Rejected) A web pleating apparatus having a mutually orthogonal machine direction, a cross machine direction and a Z-direction, the apparatus comprising:

a first series of elongate spaced protuberances converging in the cross-machine direction;

a second series of elongate spaced protuberances converging in the cross-machine direction;

a drive element disposed to form a friction nip with the first series of elongate spaced protuberances;

wherein said first series of protuberances and said second series of protuberances interleave in the Z-direction; and,

said first series and said second series of interleaved protuberances being capable of folding a pleatable web into a generally pleated pattern of machine direction pleats upon contact of said web relative to said first and second series of protuberances.

2. (Rejected) The web pleating apparatus of Claim 1 wherein said apparatus has a machine direction inlet to said first and second series of elongate spaced protuberances and said apparatus has a machine direction outlet from said first and second series of elongate spaced protuberances wherein said web maintains contact with said first series and said second series of interleaved protuberances from said inlet to said outlet.

3. (Rejected) The web pleating apparatus of Claim 1 wherein said converging elongate spaced protuberances are blades.

4. (Rejected) The web pleating apparatus of Claim 1 further comprising a converging tunnel disposed downstream in the machine direction of said first and second series of interleaved protuberances to receive said web and wherein said pleated web is constrained by said converging tunnel to maintain said pleated pattern when said web is within said converging tunnel.

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5. (Rejected) The web pleating apparatus of Claim 4 wherein said converging tunnel comprises an arcuate cavity for receiving said web.
6. (Rejected) The web pleating apparatus of Claim 1 further comprising a drive roll for pushing said pleatable web into said interleaved protuberances.
7. (Rejected) The web pleating apparatus of Claim 6 wherein said first and second spaced protuberances have a first coefficient of friction and said drive roll has a second coefficient of friction and wherein said second coefficient of friction is greater than said first coefficient of friction.
8. (Rejected) The web pleating apparatus of Claim 1 further comprising a heater for heating said pleated web.
9. (Rejected) The web pleating apparatus of Claim 8 further comprising a cooler for cooling said web and being disposed downstream from said heater.
10. (Rejected) The web pleating apparatus of Claim 1 further comprising a scoring device wherein said scoring device is capable of imparting indentations to said pleatable web prior to said pleatable web contacting said first and said second series of converging spaced protuberances and wherein said indentations are aligned with said first and said second series of converging elongate spaced protuberances.
11. (Rejected) The web pleating apparatus of Claim 10 wherein said scoring device comprises first and second axially rotatable rolls having mutually parallel axes, each of said first and second rolls comprising inter-engaging corrugations for imparting said indentations upon said pleatable web.

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12. (Rejected) The web pleating apparatus of Claim 11 wherein said first and second rolls are constrained to maintain a fixed gap therebetween, said gap being less than the thickness of a pleatable web interposed between said first and second rolls during operation of said apparatus.

13. (Rejected) The web pleating apparatus of Claim 1 wherein said first series of protuberances and said second series of protuberances are spaced apart in the cross-machine direction.

14. (Rejected) A method for forming a pleatable web comprising the steps of:
 providing a pleatable web;
 scoring said pleatable web in the machine direction;
 transporting said scored web relative to a first series and second series of cross-machine direction converging elongate spaced protuberances interleaved in the Z-direction; wherein the scored web is transported by contact with a drive element, the drive element forming a friction nip with the first series of converging elongate spaced protuberances, the scored web passing through the friction nip, and,
 folding said scored web with said interleaved first series and second series of converging protuberances wherein said interleaved converging protuberances pleat said pleatable web in the machine direction.

15. (Rejected) The method of Claim 14 further comprising the step of: forming said pleated web into an arcuate shape.

16. (Rejected) The method of Claim 15 wherein said step of forming said web into an arcuate shape comprises the steps of:
 providing a forming tunnel having a cross-section converging from a generally linear inlet to an outlet having a generally arcuate shape; and,
 inserting said web into said tunnel.

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17. (Rejected) The method of Claim 14 wherein said folding plastically deforms said pleatable web.

18. (Rejected) The method of Claim 14 wherein the step of transporting said pleatable web relative to said interleaved first and second series of converging elongate spaced protuberances comprises pushing said pleatable web relative to said interleaved first and second series of converging elongate spaced protuberances.

19. (Rejected) The method of Claim 14 further comprising the step of:
heating said pleated web.

20. (Withdrawn) A filter which comprises:
a pleated web formed by providing a pleatable web, scoring said pleatable web, transporting said scored web relative to a first and second series of interleaved converging elongate spaced protuberances, and, folding said scored web with said interleaved first and second series of converging protuberances wherein said interleaved converging protuberances pleat said pleatable web.

21. (Rejected) A web pleating apparatus having a mutually orthogonal machine direction, a cross-machine direction, and a Z-direction, the apparatus comprising:
a first series of non-collinear elongate spaced protuberances converging in the cross-machine direction;
a second series of non-collinear elongate spaced protuberances converging in the cross-machine direction;
a drive element disposed to form a friction nip with the first series of elongate spaced protuberances;
wherein said first series of protuberances and said second series of protuberances interleave in the Z-direction; and,

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said first series and said second series of interleaved protuberances being capable of folding a pleatable web into a generally pleated pattern of machine direction pleats upon contact of said web with said first and second series of protuberances.

22. (Rejected) The web pleating apparatus of Claim 21 further comprising a drive roll for pushing said pleatable web into said interleaved protuberances.

23. (Rejected) The web pleating apparatus of Claim 21 wherein said pleatable web has a first side and a second side opposed thereto, said first series of spaced protuberances contacting said first side and said second series of spaced protuberances contacting said second side when said pleatable web contacts said web pleating apparatus.

24. (Rejected) The web pleating apparatus of Claim 23 further comprising a scoring device, wherein said scoring device is capable of imparting indentations to said pleatable web prior to said pleatable web contacting said first and second series of converging spaced protuberances and wherein said indentations are aligned with said first and second series of converging spaced protuberances.

25. (Rejected) A web pleating apparatus having a mutually orthogonal machine direction, a cross-machine direction, and a Z-direction, the apparatus comprising:

- a first series of collectively elongate spaced protuberances converging in the cross-machine direction;

- a second series of collectively elongate spaced protuberances converging in the cross-machine direction;

- a drive element disposed to form a friction nip with the first series of elongate spaced protuberances;

- wherein said first series of protuberances and said second series of protuberances interleave in the Z-direction; and,

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said first series and said second series of interleaved protuberances being capable of folding a pleatable web into a generally pleated pattern of machine direction pleats upon contact of said web within said first and second series of protuberances.

26. (Rejected) The web pleating apparatus of Claim 5, wherein said arcuate cavity has a radius, said radius being decreasable in said machine direction.

27. (Rejected) The web pleating apparatus of Claim 22, wherein said arcuate cavity has a substantially uniform radius.

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EVIDENCE APPENDIX

None

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RELATED PROCEEDINGS APPENDIX

None